PORT SECTOR REGULATION

Establishing a Port Regulator in Egypt

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Government regulation of business activity has been around a very long time. In ancient Babylon, governments imposed wage and price restrictions. In Medieval Europe, religious scholars and church leaders strongly advocated that businesses charge no more than the "just price". And, for many years, the Catholic Church regulated interest rates through its usury doctrines. The standard historical interpretation of this early form of regulation says that they served the public interest, and today's theory of regulation lends support: 1) the bureaucracy was small; 2) the motives of the regulator were unimpeachable; and 3) knowledge was sufficiently complete to preclude error.

Today's need for port sector economic regulation is a function of the world's port privatization waves of the 1980s and 1990s. Prior to privatization, ports were considered natural monopolies. Privatization in most cases offered the opportunity to induce competition as well as to leverage needed investment. The elimination of what reformers had considered natural (public) monopolies may explain why the development of port regulatory frameworks has not kept pace with the privatization activity that has taken place around the world. Indeed, an examination of the many port privatization transactions in the last fifteen years would show that port reformers have generally avoided transferring public monopolies to private ones. So it wasn't clear at that time that regulation may still be warranted.

Depending on market conditions, countries have a number of strategies to induce port sector competition; they can introduce new berths or terminals, divide the existing port into terminals ("terminalization"), divide the operation within the terminal (e.g. grant licenses to stevedoring companies for vessel handling), or use short-term (contestable) contract mechanisms granting rights to operate a facility. In more mature port sectors, even inter-port competition has been introduced with the development of intermodal options or new ports that can competitively serve hinterland markets common to rival ports. To the degree that competition exists, we can assume that both consumers and port users have benefited in terms of improved efficiencies and lower costs, but even competitive port markets typically have very few players, indicating what regulators term as highly concentrated markets.

While Egypt has opened the door for large-scale private investment in its ports, the country still faces the challenge of assuring that operators behave competitively, an appropriate level playing field is established, and that certain performance standards are being met. There are still relatively few players in the markets, raising the risk of oligopolistic behavior, such as collusion in pricing and markets, as well as increasing the cost for services to the extent that they do not reflect the pricing of competitive markets.

The interest in port regulation in Egypt is a natural extension of its recent reform successes. According to the World Bank's *Doing Business* report, Egypt's pace in reform rocketed the country to the ranking as the world's most successful reformer in 2006. Economists and industry practitioners have long intuited that ports have an effect on economic success. As Kent and Fox have shown, removing port inefficiencies can have the effect of increasing GDP growth by nearly 0.5 percent.[1] So the concern with the performance of the port sector is legitimate. Having an appropriate regulatory structure in place will assure that port services do not constrain, but instead facilitate, a country's economic growth.

In this report, we first review the need for port regulation in general, drawing on international examples of port markets. We then proceed with a general overview of the competitive environment of Egypt's port sector. Though we concentrate on container trades, we emphasize that the competitive concerns hold true for all cargo types. We then address the scope for regulating Egypt's port sector and describe the monitoring procedure along with rate setting and an operational performance indicator system. We conclude by identifying the critical steps that remain for establishing the port regulator.

Why Port Markets are of Regulatory Concern

What raises a regulator's concerns about potential anticompetitive behavior are markets that are characterized as highly concentrated and how to determine if they are highly concentrated. The fewer players that are vying for market share, the higher the regulator's concern about the risk of anticompetitive behavior.

Modern day competition regulation was born out of concerns about market structure, the theoretical basis of which came at about the same time as the contestable market theory in the 1980s. The market structure orientation has relied on the use of a number of measures that are indicative of market structure. Theoretically, if a firm (or port) breaches a threshold that defines a dominant firm, then this raises a red flag to the regulator, as the firm has the potential to behave monopolistically. This implied relationship between market structure and firm behavior is often referred to as the *structure-conduct-performance paradigm*. The paradigm suggests that there is a causal link between the elements of market structure (e.g. number of

[1]Kent, Paul E. and Alan Fox, *The Broad Economic Impact of Port Inefficiency: A Comparative Study of Two Ports*, Nathan Associates Inc., TCB Project, US Agency for International Development, Washington, D.C. 2004.

firms, the nature of their products, entry conditions, and extent of government regulation) and firm behavior (e.g. pricing of services, investment, and marketing decisions) and market performance (e.g. allocative efficiency and profitability).[2]

Attempts to measure structure focus on the use of concentration ratios. As suggested by its name, the test is an attempt to combine information about the number of firms and their size, or their "concentration". Concentration ratios measure the percentage of total sales in an industry made by a prescribed number of the largest firms. In port parlance, it could mean, for example, the percentage of containers handled by the largest terminal operator (in terms of containers handled) or the largest group of operators. For example, an *n*-terminal operator concentration ratio (CR_n) measures the percentage of the total containers handled by the *n* largest terminal operators. Of course, the measure of the concentration would be applied to terminal operators competing in the same market. For ports, this market could be the hinterland that the ports serve.

Alternatively, countries may use something called the Herfindahl-Hirschman Index (HHI).[3] Like the CR test, the HHI attempts to measure market concentration, but it weighs the market shares of each market member so that a more accurate picture of the competitive dynamics of the market can be drawn. A market with a CR_4 of 80 percent is likely to perform one way if each of the top four members had 20 percent of the market, and in a completely different way if one member has 50 percent and each of the other three has only 10 percent. The HHI, which attempts to more accurately reflect the competitive dynamics of a particular market, is determined by adding the squares of the market shares.

Different countries use different CR test thresholds to determine if a market is highly concentrated. The United States uses the HHI where a "score" exceeding 1800 suggests highly concentrated markets. In the initial screening process in Germany, there is a presumption of market dominance when a firm's share is at least one-third.[4] The United Kingdom assumes a company holds a monopoly or dominant position if it controls at least 25 percent of the market.[5] In Australia, the antitrust authority would investigate a proposed

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[2]General criticism of this paradigm is that it has encouraged policy makers to place too much emphasis on the number and size of firms in their efforts to determine if a monopoly exists, putting off more important considerations, such as degree of potential competition or ease of entry. Even so, this is still the standard paradigm in competition regulation today. See Brozen (1982).

[3]The HHI's development is attributed to two different economists, including Orris C. Herfindahl, who developed it as part of his doctoral dissertation, "Concentration in the Steel Industry" at Columbia University, New York, in 1950, as well as noted economist Albert O. Hirschman, who used it in his research in industry concentration in 1950. There are several complex models available that are intended to reflect market behavior (e.g. Cournot and Bertrand models and their derivatives), but their roots are embedded in the general concepts of market concentration and firm dominance. See Cournot (1927) and Bertrand (1883).

[4]German Act Against Restraints of Competition, Section 22(3), No. 1. This is only the first step in the evaluation process. German regulators typically then proceed to an examination of the company's financial resources. Further, in the case of proposed mergers, if a firm participating in a merger records a combined turnover of at least DM 12 billion and at least two of the participants had turnovers of at least DM 1 billion each, it is presumed that the merger will create or strengthen a dominant market position, regardless of the markets in which the companies are active.

[5]The United Kingdom's Fair Trading Act of 1973 is directed to the behavior of monopolists, as defined by the 25 percent threshold test. The Competition Act of 1980 enables regulators to investigate the conduct of a

merger/acquisition if the CR_4 would supply 75 percent or more of the market (with the merged firm having at least 15 percent of the market), or the merged firm having a market share of 40 percent or more.

As earlier noted, port reformers of many countries have avoided the creation of private monopolies from public ones, meaning that competitive environments have emerged from the privatization programs. So should there be a concern about port operators behaving competitively? Let's apply these standards to perhaps the four most highly lauded port privatization cases of the 1980s and 1990s: Colombia, Argentina, Malaysia, and the United Kingdom. The threshold standards for various countries are applied here to each terminal or port in these cases. As Table 1 shows, the results clearly indicate that the markets for each country case presented are characterized as having a dominant firm, or are moderately to highly concentrated if the United States' HHI test is used. For these representative cases, the market hinterlands were defined as cities and/or regions served by the same port operators. For example, in the United Kingdom case, not all UK ports serve London and the surrounding communities. So these are omitted from the calculations.

In applying the tests to Malaysia, the terminal operator Klang Container Terminal BhD is considered, at least initially, dominant under the standards of Germany and the United Kingdom, while all of the operators together would breach the Australian standard. In Argentina, the operators of Terminals 1&2 and South Dock exceed the thresholds set by Australia, Germany, and the United Kingdom as well. Similar results are shown for Colombia in the case of the Cartagena Society terminal (applying the German and United Kingdom thresholds), and for the Atlantic coast ports in Colombia when applying the Australian standards. The United Kingdom tests breach all of the country market share thresholds as well. While not all operators in each country are considered dominant, the fact that all countries have at least one dominant operator means that the market itself is at higher risk of anticompetitive behavior on the part of the dominant operator. The results are only slightly dissimilar when considering the U.S. approach using the HHI. The Malaysian and Colombian markets would all be considered highly concentrated because there are terminal operators whose HHI is greater than 1,800, while Buenos Aires and the United Kingdom would be considered moderately concentrated. In short, every test case exhibits moderate to high market concentrations regardless of the country standards used.

The sample port systems "measured" in Table 1 are representative of post-reform efforts of most countries. So even though monopolies are avoided in post-privatization environments, there is a high probability that the resultant competitive environment will be oligopolistic,

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single firm which meet the 25 percent market share test, but also who have an annual turnover of a least £10 million per year.

Table 1
Sample Application of Market Concentration Tests

Port/Operator	Concentration Test		Considered Dominant/Concentrated in			
	Market Share	HHI*	Germany?	United Kingdom?	Australia?	United States?
Malaysia – Port Klang			yes	yes	yes	yes
Klang Container Terminal BhD	68.2%	4,649				
Klang Port Management Sdn BhD	30.4%	927				
Klang Multi Terminal Sdn BhD (Westport)	1.4%	2				
Total HHI		5,577				
Argentina – Buenos Aires			yes	yes	yes	yes
Terminales Río de la Plata (Terminals 1&2)	38.0%	1,448				
Buenos Aires Container Terminal Services (Terminal 5)	20.9%	436				
Exolgan (South Dock)	41.1%	1,687				
Total HHI		3,571				
Colombia – Atlantic Coast			yes	yes	yes	yes
Barranquilla Port Society	15.2%	231				
Santa Marta Port Society	14.4%	206				
Cartagena Society	51.2%	2,620				
CONTECAR	8.4%	71				
El Bosque	10.8%	117				
Total HHI		3,175				
United Kingdom			yes	yes	yes	yes
Associated British Ports	33.6					
Felixstowe	40.1					
Tilbury	7.8					
Thamesport	6.9					
Teesport	5.5					
Rest of UK	6.2					
Total HHI		2,813				

meaning a competitive setting which has such few players that one can greatly influence price, level of service, and other market factors.

Egypt's Competitive Setting

Egypt's port system (Figure 1) consists of seven main ports that are connected to hinterlands by freight corridors dominated by road transport. Rail service is of only nominal value for freight hauling and the use of inland water transport is minimal, though there are now efforts underway for investment in a new barge fleet to serve movements on the lower Nile River, particularly between Alexandria and Cairo.

Figure 1
Egypt's Port Sector

To facilitate entry of private operators, Egypt chose to transform its port sector administration from a system of publicly operated ports to landlord ports. The market has been liberalized to the extent that intra-port competition has been introduced and operational performance improved. The extent of private sector interest can be characterized as an "investment stampede", with many global operators entering Egypt's port sector to vie for domestic cargoes and compete for the transshipment trades. In Port Said East, the Suez Canal Container Terminal was constructed and now operated by a consortium

with the global terminal operator APM Terminals as the majority owner. The terminal has since attracted substantial transshipment volume away from Gio Tauro (Italy) and competes with Port Said Container & Cargo Handling Company, a state-owned corporation, for the domestic container trades handled at Port Said West. APM Terminals is now expanding the terminal to achieve a physical capacity of about 5 million TEUs by 2011.

Egypt has also seen the construction of a new port in Sokhna, which may be considered a "natural" gateway serving Cairo for the Eastern trade lanes, with Dubai Ports World (DPW) recently becoming the majority shareholder of the port. The port has seen robust growth in the domestic trades, handling about 440,000 TEUs in 2007. Though the existing operator (Sokhna Port Development Company, with Almira as majority shareholder) had high expectations for developing the transshipment trades, the trade for the most part has not materialized. Nevertheless, DPW is expected to build the transshipment business as well as the industrial site around the port, as it has done in Dubai.

Alexandria and El Dekheila have also seen the entry of private port operators, with concessions awarded for the conversion of two general cargo berths to container terminals, with global terminal operator Hutchinson Port Holdings being the majority owner of Alexandria International Container Terminals (AICT). Container volume handled in the two terminals was in the range of 800,000 TEUs in 2007. AICT competes with the Alexandria Container & Handling Company (ACHCO), a state-owned corporation that manages the old terminals in the two ports.

A consortium of companies, including Kuwait and Gulf Link Transport, CMA CGM, China Shipping Container Line, UASC, and the Damietta Port Authority – together, known as the Damietta International Port Company (DIPCO), was recently awarded a BOT concession for a new container terminal in Damietta, which is also the main port used by CMA CGM. The first phase of terminal development, which is expected to be completed in 2009, will have a 2.5 million TEU capacity. The state-owned company, Damietta Cargo & Handling Company, operates the existing container terminal facilities.

As shown in Table 2, Egypt's container ports are served by only two operators each (with the exception of Sokhna, which is entirely private). The few operators in each port is in accord with worldwide privatization experience indicating a very limited number of players serving the markets. So this suggests a higher risk of oligopoly behavior in Egypt's port sector as well.

World experience shows that in an effort to garner support for privatization, governments may unintentionally create un-level playing fields where rivals cannot compete on an equitable basis. In Brazil, for example, private operators obtaining concessions to operate public facilities are mandated to use the unionized labor that had manned the same facilities prior to the concessions; the operators thus inherit the same restrictive labor practices that have the effect of higher prices and lower productivity. At the same time, operators of greenfield terminals in Brazil, while required to man a part of their work force with unionized labor, are not subjected to the same restrictive labor practices

Table 2
Competitive Setting of Egypt's Container Trades

Port	Private Operator	State-Owned Operator
Port Said East	Suez Canal Container Terminal	Port Said Container & Cargo Handling Company
Port Sokhna	Sokhna Port Development Company	—
Port of Alexandria	Alexandria International Container Terminals	Alexandria Container & Handling Company
El Dekheila	Alexandria International Container Terminals	Alexandria Container & Handling Company
Damietta	Damietta International Port Company	Damietta Cargo & Handling Company

as operators of public facilities. Hence, operators of Brazil's public facilities are forced to compete against greenfield port operators that have lower labor costs, creating an un-level playing field.

Peru offers another example of an un-level playing field. In the port of Callao, Peru's commercial gateway port, the public port authority and a small group of stevedoring companies will now compete with a fully modern greenfield terminal being built by Dubai Ports World. One can envision only nominal competition given the inferior size and suitability of the public terminal for handling container vessels.

In addition to the limited number of terminal operators, Egypt's port services environmental can also be characterized as an un-level playing field. In Egypt, container terminal operations under the control of state-owned corporations compete with private operators (see Table 2). Private sector operators are permitted to compete for container handling services, though only via greenfield terminals. However, the private operator has a competitive advantage because it is not subjected to bureaucratic rules and obligations that constrain the ability of the state-owned corporations to procure equipment, change handling practices, change tariffs, and plan for capital investment to quickly respond to changing market conditions. Indeed, we have recently seen a substantial shift of carriers calling terminals operated by state-owned corporations to those under private sector hands. Under this situation, carriers and shippers are willing to pay the higher handling charges at the private terminals because of the improved level of service offered in these terminals. Accordingly, AICT has succeeded in diverting CMA CGM, MSC, and Maersk Line away from the terminal controlled by the Alexandria Container & Handling Company, the state-owned company, because of the antiquated equipment and restrictive labor practices employed at the old terminal.

A port regulator would encourage a level playing field by seeking a loosening of the constraints that bureaucratic rules place on state-owned operators. Egypt seems to recognize the inferiority of the container facilities operated by the state-owned companies; the government, for example, has agreed to lengthen Port Said West's berth by 400 meters, deepen the draft alongside the berth to 16 meters, and invest in new equipment. But the competitiveness of this terminal will still be constrained by

prevailing labor practices, and the other terminals have not yet been able to receive approval for improving the terminals and procuring new equipment.

Egypt has missed some opportunities to expand competition. For example, Egypt authorized SCCT to undergo the Phase II expansion of the container terminal while the expansion could have been in the form of a BOT concession to another operator. Additionally, Sokhna's ability to serve domestic trades relative to Cairo is hampered by the requirement for much of its containerized cargo to proceed to Alexandria for clearance before delivery to Cairo.

It should be noted that Egypt's container terminals represent two dimensions of competition. One is for the transshipment trades, which represent the majority of cargo handled by the operators, while the other is the domestic trades, which is served by all the terminals. From a regulator's perspective, competition for transshipment trades generally is not an issue for anticompetitive behavior; if such behavior exists, then a carrier can choose to move its transshipment hub elsewhere. In fact, container trades in general are fiercely competitive because of their "portability". We have seen Gio Tauro, Algeciras, Honk Kong, and Kingston lose cargoes to Port Said East, Tangiers, Johor (Malaysia), and Panama, respectively, because carriers received lower rates or sought lower labor costs from other terminal operators.

Transshipment may become a regulatory issue, however, when operators, in decreasing their rates to capture transshipment volumes, increase their rates on domestic containers to cover the transshipment "discounts". Hence, operators may greatly reduce their berth handling fees while greatly increasing domestic container yard handling, using cross-subsidies to cover revenue gaps. So there is a question of whether the cross subsidy would be in the public interest given the outcome from this cross-subsidy means a higher cost to domestic importers and exporters.

What Form of Regulation is Needed in Egypt

While worldwide experience generally shows that many countries have sought to induce competition, other countries are hearing arguments about the benefits of efficiency gains (from scale economies) and thus are tempted to offer a bigger piece of the pie to a terminal operator. Ecuador's Port of Guayaquil, for example, granted a concession to a single operator, arguing economies of scale benefits and the fact that competition (though small) exists in privately owned facilities upriver from the port. The same economies-of-scale argument has been posited in South Africa for the Port of Durban container terminal, which handles more than 1.2 million TEUs. So, while previous privatization waves sought more terminal operators, some today are seeking fewer, believing that the benefits from efficiency gains will translate to port costs that are lower than those that might be achieved through more competitors. In other circumstances, such as Matarani in Peru, market settings simply cannot support more than one operator.

We also have learned from worldwide experience that only in the rarest of circumstances does the regulator really need to set prices. As earlier mentioned, depending on market conditions, countries have a number of options to expand competition. The extent of competition that emerges defines the degree to which operators would be regulated in light of antitrust or performance concerns. The oligopolistic or monopolistic settings of post-port reform countries both suggest the need for a regulatory framework, but in the form of "light-touch" regulation consisting of monitoring price setting and operational performance rather than setting prices. There are of course exceptions: after concessions are awarded, the port authority itself may be the provider of monopoly services, such as pilotage, tug assist, maintaining a navigable channel, and providing navigation lights and buoys. So it is in these circumstances when price setting is appropriate.

As Egypt's port sector continues to evolve, there are three possible primary competitive outcomes of the future port sector:

1) there may be monopoly operators in instances where the market cannot support more than one competitor;
2) oligopolistic settings will be created, which still run the risk of anticompetitive behavior; and
3) the port authorities will have monopoly control over buoy-to-berth services (though competition can be induced for tug assist).

The outcomes suggest a regulator empowered to set port prices as well as to monitor (via tariff filings and operational performance indicators) the competitive behavior of port operators. At the same time, while approvals of mergers and acquisitions may fall under the purview of the Competition Authority, one could argue that the independent port regulator could also assume this responsibility because regulatory concerns for a market with few competitors parallel the antitrust considerations for horizontal mergers and acquisitions. This is because the same scale economies argument is used supporting larger allocations of the business in port restructuring transactions or supporting a proposed merger or acquisition. Virtually any substantial horizontal merger involves some loss of direct competition and would thus be at least anticompetitive absent all efficiencies. The skill requirements and actions for monitoring port operator competitive behavior are thus similar to those needed for assessing port operator mergers and acquisitions.

Whether Egypt chooses to maximize competition or considers scale economy advantages in continuing its concession programs, there is still a need to be concerned with the competitive behavior of terminal operators. As the competitive environment evolves and matures after full transformation to the landlord model is complete, one can expect competitive forces to affect competitive behavior. However, there is still the risk that, given the terminal operator oligopolies, firms may engage in anticompetitive behavior as each vies for dominance in the markets or attempts to retain its market share. Indeed, it was this concern that led many countries to regulate port tariffs, at least in an interim period after privatization, as was done in Colombia after its port sector reform in 1991. Because of this, Egypt needs to formulate a regulatory framework from three distinct dimensions:

1) to monitor port operator pricing behavior and operational performance and set tariffs,
2) to have the ability to review complaints of alleged anticompetitive behavior, and

3) to assess the impact of proposed mergers and acquisitions.

We first describe below the framework for monitoring competitive behavior. We then describe a system of port performance indicators that can be adapted by the regulator to be able to compare on a consistent basis operational performance (for both container and non-container operations). The section concludes with a discussion on the rate setting process.

MONITORING COMPETITIVE BEHAVIOR

This section presents operational guidelines for monitoring Egypt's port system to assure acceptable levels of performance and a competitive setting. The system generally reflects the regulatory frameworks in a number of countries. It should be mentioned that typically no situations exist where a country has established an agency specifically to monitor the port sector, with the exception of Colombia. The typical pattern is one in which countries may monitor the port sector through an agency established to monitor and enforce general antitrust law. Mexico, for example, has the Federal Competition Commission as the agency with primary responsibility for competition law. The Swedish and British counterparts are the Swedish Competition Authority and the Office of the Director General of Fair Trading. Having stated this, many countries have established the equivalent of public utility commissions (as Egypt has with its Telecommunications Authority) not so much for enforcing antitrust provisions, but instead for rate setting (economic regulation).

We should emphasize the framework is conceptual. Any final framework should be based on the scale and scope of regulation required for Egypt, which is based on a detailed assessment of the extent of competition.

THE MONITORING FRAMEWORK

Without exception, international experience suggests that regulatory agencies typically do not have the resources to respond to every complaint or hint of a violation. Given this limitation, international experience also shows that the relevant agencies constantly debate whether they should take proactive approaches to monitoring, or if they should be limited to reactive approaches. The proactive approach suggests that the regulator would itself identify possible anticompetitive behaviors. The reactive approach is one in which the agency would respond to a complaint it receives. Typically, complaints received refer to business conduct matters, such as predatory pricing, discrimination, nonconformity to established or published tariffs, and poor service, while proactive matters relate to the underlying market conditions that created restraints on competition. In general, agencies pursue both courses.

A country's regulatory agency could potentially receive an excessive number (relative to its resources) of complaints. Port operators alone could generate a substantial number of complaints given the thousands of shippers (importers and exporters) they serve each year, not to mention the array of other port users (e.g. carriers and other terminal operators) that could themselves complain or could generate complaints on their own account. All of these would require some form of response from the

regulatory agency, even if it is determined that the complaint has no merit or is not covered under prevailing law. Because regulatory agencies do not have unlimited resources, they cannot pursue every apparent infraction. Agencies have therefore developed formal selection procedures as a way for screening and streamlining the number of cases that are to be pursued.

Figure 2 presents a framework for case screening, evaluation, and disposition within the port regulator. The framework is drawn generally from international practice and adapted to the port sector context. As earlier noted, it is desirable to assure an aura of neutrality in case decision making, and this feature is provided for to a certain extent with the establishment of independent evaluation committees within the port regulatory agency.[6] This and other features are described below in the context of the framework's four components, including 1) case identification, which can come from a complaint or from "proactive" monitoring; 2) registration and screening; 3) case evaluation; and 4) case disposition.

Case Identification

The process begins with the identification of a potential case. Cases may be identified as a result of formal complaints filed with the port regulator from external sources, such as competitors of the operator, consumers, concerned citizens, trade and industry groups, lawyers representing aggrieved parties, government agencies, and politicians. Cases my also be identified as a result of the agency's own initiative because of its general planning, development, or regulatory functions within the port sector. Additional potential cases may be identified from external sources that the regulator may periodically review, such as trade journals and annual financial reports issued by the port sector's various businesses or tariff filings mandated by the port regulator.

As Figure 2 shows, mergers and acquisition cases are treated differently than other cases. This is because mergers and acquisitions tend to raise issues related to market structure, while other cases tend to be related to business conduct (e.g. collusion, predatory pricing, etc.). Because of the magnitude of the financial implications of such transactions, regulatory agencies are typically required to consider, evaluate, and dispose of the case within a certain time frame. Assuming the agency determines that it is in the public's best interest to monitor mergers/acquisitions in the sector, then the members of the sector should be compelled to file notification reports for impending mergers/acquisitions.

The premise in the framework here is that all proposed mergers/acquisitions would need regulator approval to proceed. This is in the interest of the merger/acquisition parties. The parties will know before hand if the merger/acquisition would be challenged by the regulator if in its determination there are serious anticompetitive concerns arising from the proposed mergers/acquisitions. This will

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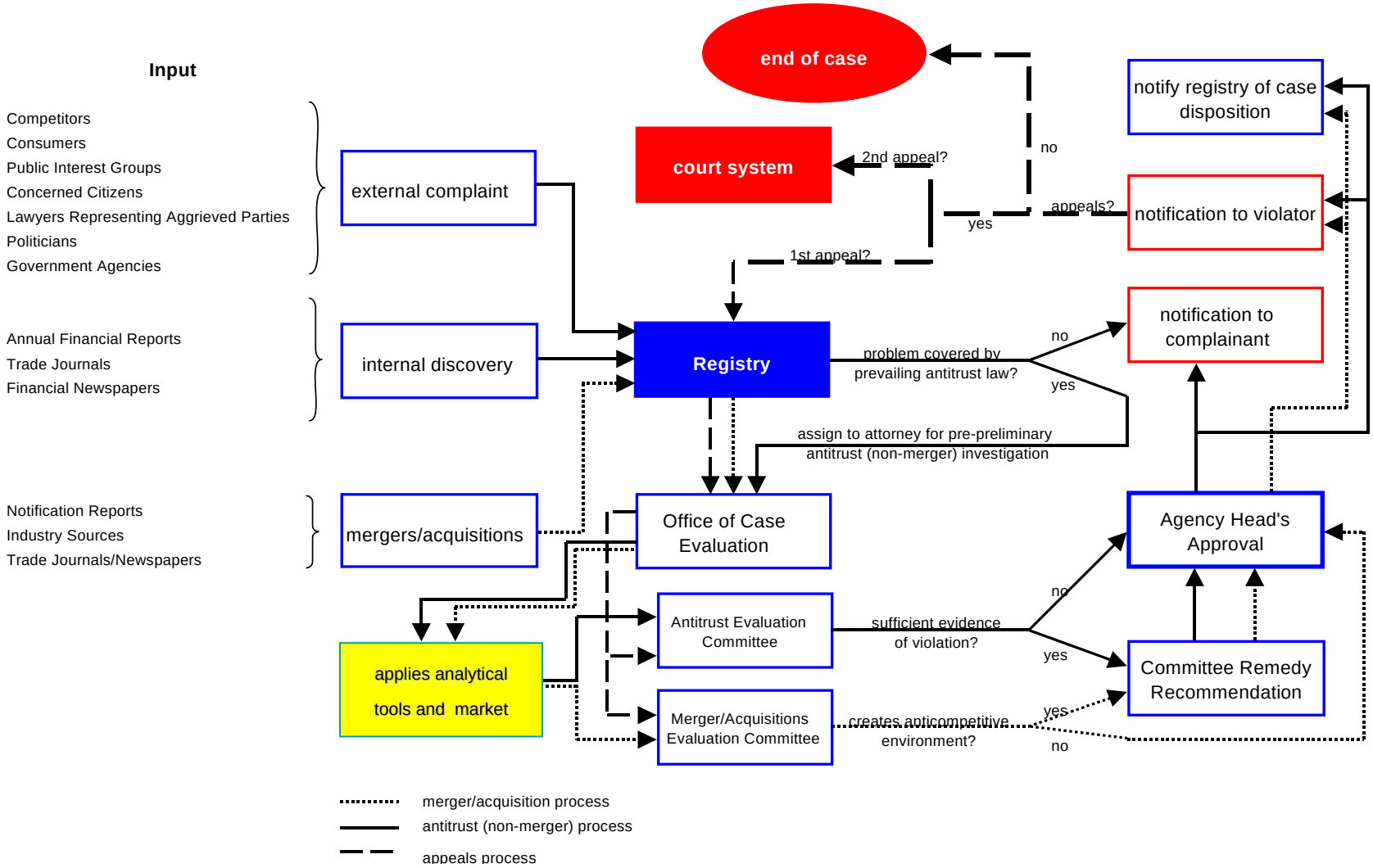
[6] What follows is a conceptual discussion on what will likely be the end state of the Independent Port Regulator. Initially, the Regulator is likely not to be established with a large staff; as regulatory responsibilities are implemented and as the Regulator receives an increasing number of complaints or cases, staffing will expand to the extent that these internal committees are actually established. In the interim, the functions of these committees can be served by one or two individuals.

Figure 2

Conceptual Framework for Monitoring Competitive Behavior -- Case Screening, Evaluation, and Disposition Process



allow the parties to avoid the legal and other substantial costs associated with the merger/acquisition process as well as potential dissolution or divestiture costs in the event they proceed without regulator review. Both the acquiring and to-be-acquired operators should file notification reports, as should both parties to the mergers. This will enable the regulator to be fully cognizant of all parties associated with the transaction as it is conceivable that non-port sector companies will acquire or merge with those in the port sector. The regulator will need to assess the antitrust implications of such acquisitions or mergers. Notification reports include such information as the nature of the business and services offered, the degree of concentration in the business, the market share of the companies involved in the merger or acquisition, net income, total assets, and rate of return on equity.

International practice suggests that even where merger/acquisition parties are compelled by the law to submit notification reports and await approval by the relevant regulatory agencies, there have been instances where the parties have proceeded with the transaction without notification and approval. These cases are identified during the course of the regulator's monitoring function, which may include reviewing industry trade journals and commercial newspapers that typically report such transactions. In such cases, the companies involved are typically fined for not following filing requirements, even if the eventual outcome results in merger/acquisition approval. In the event the regulator envisions a deleterious competitive impact if the transaction proceeded without the regulator's approval, then the merger/acquisition parties (both of them) would be fined and divestiture or dissolution would be ordered.

Registration and Screening

Once complaints, internal discovery reports, and merger/acquisition notification reports, are received, they are routed to the Office of the Registry. The Office of the Registry is composed primarily of attorneys with a background in antitrust law who sort the cases by case type and log the case in a computerized case tracking system. An initial system inquiry is performed by the attorneys to determine if the potential case is related to an ongoing one or if a similar kind of matter is presently under investigation within the agency. If the potential case is related to an ongoing one, or is similar to one currently being investigated, then it is forwarded to the attorneys involved in the case within the Office of Case Evaluation (or an individual with this responsibility). They in turn send an acknowledgment to the case's source (the complainant or the pertinent individual within the agency) that the case has been assigned as part of an ongoing investigation.

If a Registry attorney determines that the case clearly does not constitute violations of prevailing law or agency rules, then a written response to the complainant or to the pertinent agency office or individual (in the case of internal discoveries) is prepared by a Registry attorney that describes why the case has no merit, and is so noted in the case tracking system. If the case is determined to have merit, and is new and unrelated to an ongoing one, then it is forwarded to the Office of Evaluation (or relevant individual), where an attorney will be assigned for further screening. At this point of the process, the Registry attorney has already made a determination that at face value the complaint or internal discovery has legal merit. However, the description of the alleged violation may be so vague that the Office of Case Evaluation attorney will solicit more information from the complainant. After

receiving more information, the Case Evaluation attorney may conclude that evidence of illegal behavior does not exist or that the claims of the complainant, often a competitor of the would-be respondent, are greatly exaggerated. Under these circumstances, the Case Evaluation attorney will prepare a letter to be sent to the complainant indicating the circumstances and disposition of the case. The Registry is also notified, following which appropriate notations are made in the case tracking system.

It should be emphasized that the Registry's case tracking system is the major tool for case management within the agency. Not only does it document the status and disposition of complaints, internal discoveries, and notification reports, but it provides a way of recording the number of complaints by violation type and by alleged violator. The Office of the Registry will therefore track volumes of complaints regarding the same service or port sector company. Although not indicative of a firm having violated the laws or rules, an inordinate amount of complaints serves as a cue for further investigation, thus representing another form of internal discovery tool for the regulator. In such cases where complaint volume is high, the cases are forwarded to the Office of Case Evaluation (or Case Evaluation attorney) for further investigation.

Case Evaluation

When a case merits further investigation, it is forwarded to the Office of Case Evaluation. As described below, the main function of the Office of Case Evaluation is to assure that sufficient information and evidence is available for the Complaint Evaluation and Mergers/Acquisitions Evaluation Committees to make a decision on whether a violation has occurred and what the remedy should be. The Office's functions are therefore investigative and research oriented. The term "Evaluation" is applied because the Office has to evaluate the case files to assure that sufficient evidentiary and other data are available before the Committees deliberate on the cases. The Office should have separate units for merger/acquisition and non-merger/acquisition cases assuming activity (case) volume justifies this. The Office is staffed with administrative lawyers, accountants, financial and tariff analysts, economists, and market analysts who can be drawn from the consulting committee as needed.

As has already been noted, if the complaint or discovery is related to a pending case, then it is directed to the attorneys charged with investigating the problem. Otherwise, an Evaluation Office attorney will perform a pre-preliminary investigation. The purpose of this investigation is to get a general overview of the issues surrounding the case. For example, for an antitrust complaint filed against a terminal operator, the pre-preliminary investigation attorney, perhaps with the assistance of a port sector market analyst or industrial economist, will examine trade journals, financial and other reports that may already have been filed by the terminal operators to the agency, and cargo flows. The attorney will also identify the specific market governed by the complaint, calculate concentration ratios, and barriers to entry. The attorney will also send inquiries to the judicial branch and other pertinent regulatory authorities to determine if a case involving the same alleged violation and violator is pending, or had already been deliberated, elsewhere. Should the attorney conclude that a reasonable possibility of anticompetitive conduct exists, then a memorandum will be prepared recommending that a greater amount of resources be devoted for further investigation. If the head of the Case

Evaluation Office agrees with the assessment, then the case is transmitted to the appropriate evaluation committee for further consideration.

The Case Evaluation Office also handles merger cases. Because of the nature of such cases, strong support will be needed from industrial or maritime economists, who can be drawn from the consulting community as necessary. The economists assigned to a particular case, which may have been identified through internal discovery or notification reports, gather background information of the merger cases. Raw data are obtained from specific port or terminal operator/stevedoring company financial reports and other documents that may be filed within the agency, the chamber of commerce, and other sources that may reveal the financial status of the companies involved and the nature of the markets they serve (geographic as well as specific services offered). This information is used to corroborate or supplement the information provided in the merger/acquisition notification reports filed with the agency, or to have available a data base in merger/acquisition cases that proceeded without notification or approval by the agency.

Once the Case Evaluation Office's preparatory work has been completed in both merger and other antitrust cases, the two committees it serves, including the Antitrust Evaluation Committee and the Mergers/Acquisitions Evaluation Committee, are ready to deliberate.

Anti-Trust Evaluation Committee

As noted, by the time a case is forwarded to the Antitrust Evaluation Committee, a pre-preliminary investigation conducted by the Office of Case Evaluation determined that the agency should consider devoting more resources to an inquiry to decide if there is reason to believe that the law or agency rules have been violated. The Antitrust Evaluation Committee (AEC) makes the decision on behalf of the agency if the (non-merger/acquisition) case should be further investigated.

As earlier noted, the framework presented here is such that the port sector regulatory agency is also responsible for pursuing antitrust investigations of the same sector. This suggests the need to establish independent committees within the agency that essentially report to no other entity during its deliberations, and whose decisions cannot be overturned by other units or individuals within the agency. Committee membership specifically excludes representatives of the Office of Case Evaluation, but would include other agency senior managers and senior employees (e.g. antitrust/administrative law attorneys, financial analysts, accountants, tariff specialists, and economists, depending on the nature of the case) who were not involved in the case during its pre-preliminary investigative phase at the Office of Case Evaluation. This assures to some extent objectivity and neutrality as the Committee deliberates on the case. Committee members, however, are free to call on their respective technical personnel to support the investigative process as the case proceeds.

The AEC's main purpose is first to determine if it should proceed with a formal investigation. The Committee process begins with a presentation to the AEC by the Case Evaluation Office individual presiding over the case. The individual attempts to highlight the salient issues that the AEC will have to weigh. If the AEC determines that corrective action is unnecessary or not possible, or that the apparent violation was minor and has been corrected, or some other entity is investigating the same

case, then the AEC will not proceed with a formal investigation. Otherwise, a formal investigation is commenced via a resolution issued by the AEC.[7]

After the formal investigation is launched, it proceeds until some determination is made as to whether the agency should recommend that a complaint against the violator be issued by the agency. The AEC may decide to close an investigation before its completion because it finds it unlikely that the complaint has substantive merit that would justify the Committee's complaint recommendation; or, at the conclusion of the investigation, the Committee may determine not to issue a complaint for the same reason. However, because much of the groundwork has already been done by the Office of Case Evaluation, it is expected that this outcome would not occur very frequently. If the alleged violation warrants an official complaint by the agency, then the Committee will also weigh the various remedies that should be applied.

*Merger/Acquisition Evaluation Committee***Error! Bookmark not defined.**

While the Competition Authority currently has jurisdiction over mergers/acquisitions, it is conceivable that this responsibility could be allocated to the Independent Port Regulator. This committee handles merger/acquisition matters exclusively and consists of senior industrial economists and/or market analysts as well as attorneys. While the attorneys play the pivotal role for the Antitrust Evaluation Committee because it is concerned primarily with illegal conduct issues, the economist plays the pivotal role in the deliberations of the Merger/Acquisitions Evaluation Committee (MEC). This is because mergers and acquisitions involve primarily economic or market structure factors, the analysis of which presents the basis for the legal arguments supporting approval or disapproval of the mergers/acquisitions.

As in the case of the AEC, the MEC must determine whether there is reason to believe that the intended merger/acquisition (or past merger/acquisition if the transaction had been consummated without agency approval) would create undue anticompetitive conditions. For those mergers/acquisitions that are investigated, the economists and lawyers examine certain economic features. The relevant service and geographic markets are defined, then MEC members focus on the proportion of the relevant market held by the companies, the trends towards industry concentration, the existence of entry barriers, and the economic size and strength of the acquiring company with respect to the particular market under study. If the merger/acquisition would create significant barriers to entry, then the MEC will proceed with a formal investigation (which also may require certain evidentiary proceedings that are not explicitly authorized in a country's law) or the issuance of a complaint. The evaluation criteria will vary with the type of merger/acquisition (e.g. vertical, horizontal, market extension).

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[7]It should be noted that to proceed suggests that the AEC will need additional evidentiary information to support the investigation. This would rely on certain legal process powers (e.g. compulsory process and subpoenas) that would need to be in place as part of the agency's enabling legislation.

Case Disposition

Once the Committees have completed their formal investigations, they submit the results of the investigations to the Regulator's commissioners who then make a determination if an anti-competition (non-merger/acquisition related) violation occurred, or that a proposed merger/acquisition would create undue anticompetitive conditions. The Board members then order the respective Committees to issue complaints to the violators or transaction parties and also issue orders for remedial actions. The agency's head is required to sign off on the complaints and remedial orders as well as determinations that there were no violations or anticompetitive concerns; his authorization, however, is not intended to decide if the Board's determinations are warranted. Rather, his role is to determine if, and certify that, the Committees followed established administrative procedures. This preserves the objectivity and neutrality intent of the investigative deliberations and assures administrative compliance to avoid undue challenges to Committee decisions in the event they are appealed.

The agency head's office then notifies the Registry as well as the complainant and alleged violator of the Committees' decisions. The Committees can consider a range of remedies, depending on the nature of the violation and the sanctioning authority the port regulator law or executive decree assigns to the agency. Remedies typically include the issuance of simple cease and desist orders, fines, orders for divestiture or dissolution in the case where mergers/acquisitions had proceeded without agency concurrence, and rebates to those harmed by the violators.

It is possible that violators will want to challenge the Committees' decisions. The alleged violators may argue that the Committees did not hear all of the evidence, or had come to the wrong conclusions based on the evidence available. In such circumstances, the violator is required to submit an appeal through the Registry, whereupon after the appeal is documented in the case tracking system, the Office of Case Evaluation will review the appeal to assure that any additional evidence provided by the violator is included in the case file. The Office then prepares an additional memorandum on behalf of the respective Committees summarizing the additional evidence received and assessing the impact that the additional evidence has on the merits of the case.

The appropriate Committee will then review the case in light of the additional evidence, and may even call on the violator to provide additional testimony. The Committee may then recommend to the Board members repealing or amending the original decision, or reaffirm it, which is then followed by a review of the agency head's office to assure conformance once again with established rules and procedures. The appeal decision is then recorded with the Registry. The agency will then hear no further appeal. If the violator still disagrees with the Board's decision, then it may be relegated to the Competition Authority or to the civil courts.

RATE SETTING

The most visible part of the regulatory process and the principal vehicle through which changes are made to prices or tariffs is a proceeding known as a rate case. We should emphasize that in only the rarest of circumstances would rate (or price) setting be needed in port sector regulation. The situation

in Egypt where the Port Authorities maintain monopoly control over certain buoy-to-berth services may warrant rate setting. Otherwise, where competition exists, even in oligopolistic settings, monitoring of pricing behavior could instead be done via tariff filings by port service providers. In this case, deviations from previous tariff filings, or comparisons with the prices of other service providers, can provide the basis for determining if pricing is "fair" or competitive. There are analytical tools that port economists have developed that can assist the port regulator in the tariff monitoring function.[8]

A rate case is a presentation of evidence to the regulator that is intended to support the position that either the level or structure of the regulated operator's tariff should be set or changed. If the regulator has determined that an operator is a monopoly or there is a high risk of monopoly behavior, then it will establish a tariff to impose on the operator. If an operator feels in time that the tariff imposed by the regulator does not allow it to earn an authorized level of profits or that the authorized level of profits is too low given current economic conditions, then the operator will file a petition for tariff modification and request a rate case. If the regulator's staff believes that the operator is over-earning relative to its authorized level, that current prices will systematically lead to that result, or that in its monitoring function the staff determines that an operator is behaving anti-competitively and wishes to set prices to control for this behavior, then the staff may request a rate case. So a rate case may be initiated by either the regulated operator or by the regulatory board (generally at the prompting of the regulator's staff).

Rate cases occur in court-room like settings, which prescribes rules of procedure. Board members will judge the merits of the arguments and evidence presented before them and decide whether to allow or disallow the proposed changes to the established tariff rates or adopt a set of rates different from that proposed. Once a rate case has been announced, say, to increase the rates, the board will generally issue a procedural order setting out a timetable for the presentation of evidence, the permissible extent of the discovery, and the dates for the hearing.[9] In the most typical format for the presentation of evidence, the operator or port authority requesting the rate increase files direct written testimony with the board. In this testimony, the operator/port authority presents its case for the proposed rule change. After some period, generally set by the board to be from 30-90 days, any interveners to the case then file rebuttal testimony. In this rebuttal testimony, the interveners present their reasons and evidence why they either support or, more likely, oppose the operator's proposed rate changes and offer any modifications they recommend.

The testimony presented by the various parties will often include expert witnesses from accounting, finance, engineering, economics, or marketing. These expert witnesses are generally established

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[8] See, for example, Kent, Paul E. and Asaf Ashar, "Port Competition Regulation: A Tool for Monitoring for Anti-Competitive Behaviour", *International Journal of Maritime Economics*, Volume III, Number 1, January-March 2001.

[9] Discovery is a process through which the various parties to the rate case are provided access to data, memoranda, and other factual material held by other parties. "Parties" may include, in addition to the operator whose rates are being considered, the general public as represented by shippers, carriers, other terminal operators, and other parties affected by the rate decision.

professionals and are drawn from within the regulated operator, from consulting firms, and from university academic departments. Also, it is common for a high-level company official to serve as a policy witness before the board. The role of the policy witness is to synthesize the operator's case, to field broad questions regarding the operator's official position on various issues, and to serve as a "lightning rod" for those parties that oppose the operator's recommendations for rate changes. During the hearing, which can take from one day to several weeks or months, the various witnesses are cross-examined on their written testimony before the board by attorneys representing the various (and often numerous) parties to the case.

In practice, most rate hearings proceed in two fairly distinct phases. Phase 1 is the so-called "revenue requirement phase". Here, the board attempts to determine the total revenue that will be required for the operator to earn an appropriate (or "fair") rate of return on its invested capital (or rate base). The two predominant issues during this phase are determination of the operator's cost of capital and valuation of its rate base. The outcome of this phase of the hearing is a total value of revenues (the revenue requirement) that will allow the operator to achieve the approved rate of return.

The second phase of the hearing is the "rate design phase". Here, specific rates or rate structures for a specified "basket" of services are proposed by the operator, analyzed by staff, debated by interveners, and decided by the board (with staff input). The outcome of this phase determines the actual tariff rates paid by the regulated operator's customers and, thereby the flow of cross-subsidies among customer groups. The following sections briefly describe in more detail the two phases of the rate hearings.

Revenue Requirement Phase

Every rate case is different, with its own particular set of issues and nuances. Moreover, the procedural process of rate cases varies from country to country. Nevertheless, there is a basic structure to traditional rate-of-return regulation[10] that is captured by the following equation:

$$S=(R-E)/K$$

Where

R = total revenue from sale of the operator's products or services
E= expenses for labor, fuel, materials, taxes, etc.
K = value of the capital stock of the operator net of depreciation, known as the rate base
S = the allowed rate of return.

[10]Rate-of-return regulation is used as an example here. There are other approaches to regulation (e.g. maximum pricing, minimum pricing, min-max pricing, profit, etc.) that could be used, but even these to a certain extent rely on a profit-related indicator. The exact form of price setting, which falls outside the scope of this report, should be determined during regulator start-up activities.

Regulators have an obligation to assure that rates are just and reasonable and that prescribed rates enable the operator to maintain its financial integrity. In practice, regulators have attempted to set rates that will generate sufficient revenues in the above equation to satisfy this standard. The equation represents the operator's earnings (net of operating costs) relative to its rate base (K). The numerator is simply the operator's total revenue, R, minus all of its non-capital operating expenses (E). Dividing these net earnings by the value of the capital stock of the company yields a rate of return on the operator's rate base. For example, if the rate base of the operator, K, is $120 million, revenues R are $6 million and expenses (E) are $4.2 million, then the rate of return would be 15%. That is,

0.15 = (6,000,000-4,200,000)/120,000,000.

While it would seem to be a rather simple process to solve the equation for the rates that will satisfy the board's desired rate of return, nearly every component of the equation can be contested. To see this, let's consider the individual components of the equation.

Operating expenses (E) include payments for wages, fuel, materials, supplies, maintenance, etc. These expenses are, for the most part, not terribly controversial and are generally approved by the regulator. Although it may be tempting for regulators to second-guess certain operating expenses, the ability of board members to intervene in managerial decisions that lead to these expenses is really quite limited. In recent years, however, debates have arisen over whether to allow expenses incurred for advertising, escalating utility costs, and research and development. Additionally, the issue of the appropriate level of expenses often arises where a vertically integrated regulated firm purchases certain inputs from itself. For example, a terminal operator may "purchase" tug services from a tug company it owns. In the absence of any scrutiny by the regulator, it is possible for the operator to circumvent regulation by manipulating the "transfer" price at which it sells itself the vertically integrated input. Therefore, regulators tend to investigate the expenses associated with these vertical transactions.

Additionally, there are various approaches to valuing the rate base (K), including the 1) original cost standard, 2) the replacement cost standard, and 3) the fair (market) value standard. These standards can yield significantly different estimates of the value of the rate base and, hence, can produce substantially different returns to the firm via the above equation.

In recent years, perhaps the most controversial part of rate cases has centered on determining the appropriate allowed rate of return (S). In competitive environments, the rate of return allowed by the market in the long run is normal profits (that is, zero economic profit). Normal profits include the incremental cost of capital adjusted for the relative risks associated with port sector operations. If profits exceed this normal profit (that is, the cost of capital), then, in competitive port environments, entry and/or expansion of incumbent operators occurs until the price is driven down to equality with long-run average cost, just covering the marginal cost of capital. Conversely, if the rate of return in competitive environments does not cover the marginal cost of capital, then normal profits are not achieved, and the port sector will see operators shutting down, which causes prices to rise. Based on

this competitive industry benchmark, the appropriate rate of return for natural monopolies is one that allows the operator to just cover (but not exceed) its incremental cost of capital.

Even in competitive environments, particularly in those where the privatization/restructuring experience is still in its "nurturing" stages, operators initially view the pursuit of a concession as high risk in countries where the port sector is notoriously known for inefficiency, high cost, and inadequate infrastructure. So, while 12-15% rate of return may be an acceptable norm for some countries, operators in other countries, even in competitive environments (e.g. Panama, particularly in the transshipment trades) rates of return can be much higher. Finally, some operators will argue that higher profits can be the result of management innovation and, hence, they argue they should not be penalized for smart decisions.

There are new arguments today that challenge the merits of using accounting profits as a signal for determining the existence of monopolistic pricing. This is because the profits reported in financial statements are not really the profits that firms consider when they decide how and where to allocate resources. And the absolute magnitude of those profits is not what firms consider when making decisions about which lines of business to enter. New thinking makes important distinctions between accounting profits (the profits typically reported in financial statements) and economic profits (which are not normally reported in financial statements). Economic profits represent the profits over and above that amount necessary to keep a firm's resources employed in their current use, that is, in the business that is generating the profits. In other words, economic profits represent the difference between revenues earned and the costs incurred, where costs include opportunity costs such as a capital cost. Therefore, economic profits, which are more important to a firm making strategic decisions, are ordinarily lower than the reported accounting profits. Therefore, because of high opportunity costs, it is possible that high accounting profits can be realized while experiencing low or even negative economic profits.

After determining the revenue requirement for an operator (as indicated above, no easy feat), it is then time for the regulator to determine the appropriate set of prices, which is the objective of the second phase of the rate hearing.

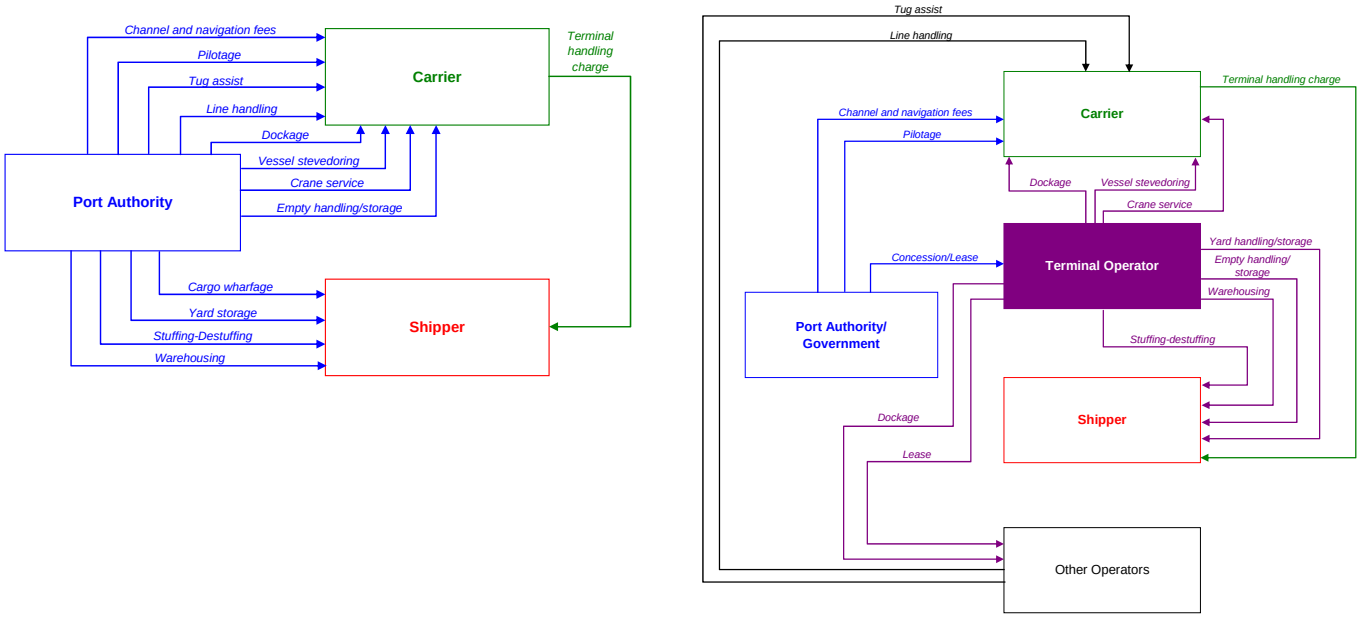
Rate Design Phase

Although rate cases are primarily concerned with the overall level of regulated firm's rates, regulators must also set the price structure for a regulated operator's services. In general, a variety of pricing structures are available to an operator to achieve any preset level of revenues and, therefore, any given rate of return. For example, an operator offering two services, A and B, can achieve a given total revenue R by charging a higher price for A and a low price for B. In general, then, the regulator can set the two prices in a variety of levels in order to maintain the same rate of return S. The regulator thus has a broader pricing latitude than originally believed, which can also create substantial opportunities for cross-subsidization between various customer groups. And, given the different levels of economic

and political clout held by these groups, such cross subsidies tend to appear quite often. The regulator will feel these constituent pressures, which is why in structuring the governance of regulators we strive for establishing "firewalls" for assuring independence. At the same time, greater assurance against such pressures can be obtained by simply following the precepts of a market oriented port environment, which is, to the extent possible, to induce competition and avoid the need to set prices (e.g. "light-touch" regulation).

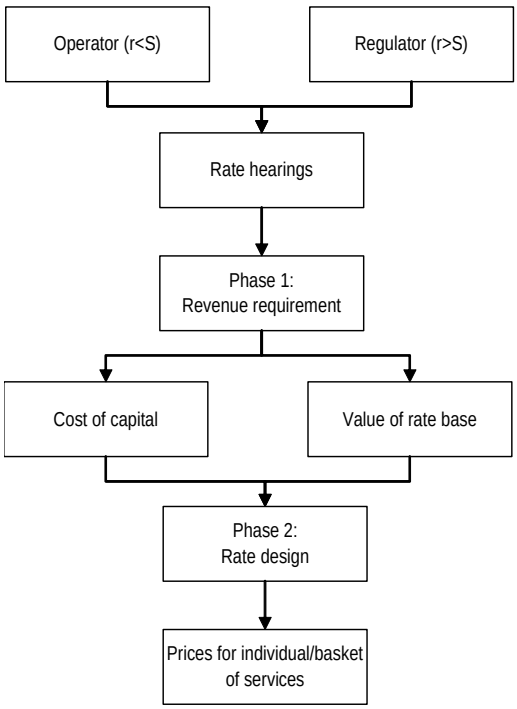
We should also mention that a post-privatization environment also offers more regulatory scope in terms of the potential number of companies whose pricing should be monitored or set. As Figure 3 shows, there are many more transaction flows post-privatization, meaning there are many more players involved in providing port services. So the scope of regulation could extend from terminal operators and port authorities to line handlers, tug assist, and stevedoring.

Figure 3
Port Services Transaction Flows Pre- (left) and Post-Privatization (right)



In closing, Figure 1-2 provides a flow chart for a typical rate hearing. If we let r be the regulated operator's pre-hearing realized rate of return, then we expect the operator to initiate the hearing if r<SW, and we expect the board to initiate the hearing if r>S. The chart follows the flow of the hearing process and identifies the principal issues that are decided along the way.

Figure 4
Flow of Typical Rate Hearing



A WORD ABOUT SERVICE CONTRACTS

Service contracts are agreements between terminal operators and carriers. They can cover a variety of provisions, but generally they may consist of volume discounts, preferential service with volume guarantees, and carrier service requirements. These agreements are confidential, and hence terminal operators are very reluctant to disclose them. However, the desire and need to address service agreements comes from the same arguments requiring approval for tariff modifications. That is, that terminal operators are monopolies or oligopolies and accordingly there should be some effort to monitor price setting behavior. As service agreements generally set out the terms for which services will be provided to specific port customers, service agreements can be *de facto* price setting mechanisms, and the only means for assuring that discriminatory or non-competitive behavior is not occurring is by monitoring prices and pricing behavior.

While the regulator will have responsibility for approving tariffs, presumably to assure that tariffs are "fair", companies can still price discriminate within these tariff limits. Price discrimination exists when two "similar" products which have the same marginal cost to produce are sold by a firm at different prices. For example, in simplistic terms, let's say that Carrier A will bring in 100,000 container moves per year; the terminal operator in this case offers an "all-in" price of $200 per (domestic) move. Carrier

B offers the same volume, but the terminal operator offers a different price, say $230/move (in this example, we assume that non-price terms are the same). Note also that in lieu of different prices, the terminal operator may offer a rebate per move (or an amount per move over a certain volume threshold) of amount x to Carrier A, and amount y or no rebate to Carrier B. Whether under different prices or different rebate amounts, established regulatory frameworks would deem this behavior discriminatory and hence in violation of antitrust law. The rationale for price discrimination provisions in regulatory frameworks is quite clear. More favorable pricing to Carrier A offers an advantage to that carrier over Carrier B to the degree that Carrier A can offer lower freight rates and (perhaps) drive competition away.

If we can agree that service agreements are a pricing mechanism, then the argument over a regulatory role is moot. The regulator has to assure that the public interest is served via "fair" pricing. This brings us to the question of filing requirements. While global customers will be familiar with the requirement of various regulators internationally regarding the filing of agreements, this does not apply to terminal operators *per se*. However, common ocean carriers certainly are accustomed to agreements filing[11]. Both Canada and the United States currently require filings. In the United States, the law states the following with reference to the types of agreements that are to be filed: agreements by and among ocean common carriers that provide for the fixing of rates, charges and other conditions of service; the pooling of revenues; the fixing of sailing schedules; the sharing of vessel space; the regulating of competition; (and) the discussion of service contract matters; or *any exclusive, preferential, cooperative working arrangement between carriers or with or among marine terminal operators are subject to filing*[12]. Canada requires the filing of carrier service agreements with the Canadian Transportation Agency, while in the U.S. the filing requirement is with the U.S. Federal Maritime Commission. And until 2002, the European Commission required the filing of such agreements (the reasons for terminating the filing requirements are discussed later).

The European Competition Directorate General (DG) is responsible for addressing competition regulation for the entire European Union. Accordingly, the DG required filing of carrier service agreements until 2002, when the DG determined that the volume of filings was too much for them to manage. They now have a voluntary filing process in which carriers may or may not file their agreements. Many carriers still choose to do so because it is assumed the agreements when filed are valid; some carriers choose to be very open with the regulator in service agreement provisions, while others prefer not to go this route. In either case, the DG takes a reactive posture, reviewing service

[11]When the Shipping Act of 1984 was enacted in the United States, Congress, for the first time, permitted the use of service contracts in international liner transportation. These are arrangements by which a shipper commits to a certain amount of cargo over a fixed time period and an ocean common carrier to certain (typically reduced) rate and service levels. Today in some trades approximately 80-90% of the cargo moves under such carrier service agreements. Carrier service agreements are very similar to the sorts of terms negotiated under agreements between terminal operators and ocean common carriers.

[12]46 C.F.R. § 535.201is the relevant U.S. statute.

agreements (and terminal operator service agreements) only if a complaint is received, and conducting an investigation as warranted.

The point of the above is that Egypt can expect carriers to object to service contract filings; however, carriers are certainly accustomed to the filing of agreements with regulatory bodies, whether the filing is mandatory or voluntary. Carrier service agreements notwithstanding, note that *terminal operators* are also required to file service agreements with the U.S. Federal Maritime Commission (FMC). If the service agreement implies a price for a service, then the filing requirement applies. There are other forms of service agreements (e.g. facility access) that are exempt from filing.

On the issue of confidentiality, which terminal operators will claim, it is hard to imagine that in Egypt the government is not entrusted with confidential information somewhere. For instance, as foreign banks are required to pay taxes on operating profits, certainly the law requires the filing of tax reports that are held confidentially by the relevant government authority. So there is no reason to expect that the regulator would not also keep service agreement filings confidential. In respect to the maritime industry, the Ocean Shipping Reform Act (OSRA) in the United States had a shift in philosophy about confidentiality. Prior to OSRA, the essential terms of individual carrier service agreements, which had to be filed with the Federal Maritime Commission, were a matter of public record. Now, the filing requirement remains but confidentiality is ensured for key provisions such as rates, service commitments, and intermodal origin and destination points. Similarly, in Canada carrier service agreements must be filed with the Canadian Transportation Agency and are kept confidential.

In the port industry where competition regulation is established, regulators are entrusted with extensive general powers to request confidential information. As an example, Section 29 of the Essential Services Commission (ESC) Act of 2002 of South Australia and Sec 37 of the Victorian Essential Services Commission Act 2001 require complete access to records in furtherance of regulatory functions. Sec 30(3)(e) of the National Ports Act 2005 in South Africa also gives the South African port regulator the power to issue directives on gaining access to confidential information of the National Ports Authority.

In considering the options for Egypt, the regulator can include general mandatory filing or subpoena powers for acquiring information. But in keeping with our overriding principle of "light touch" regulation, we believe the regulator should not be entrusted with such unspecified, wide-ranging powers to request information (as in the case of ESCs in Australia), favoring the filing of agreements or in requiring submission of agreements in the event a complaint is filed. If the Australian approach is followed to the letter, the effect would be to give the regulator even greater powers of intervention than what would otherwise be considered a light-touch regulatory approach.

In container terminal operations, a relatively substantial amount of business is governed by service agreements rather than the standard tariff that might be filed with the regulator. As a result, the regulator will have no access to tariff information in respect to the activity governed by these

agreements unless the agreements are filed or the regulator is given the powers of discovery equivalent to the Australian case. Without access to information, the regulator's ability to undertake economic regulation or competition monitoring is severely limited.

Egypt's port regulator is responsible for safeguarding the public interest in matters of economic regulation (among others); if we accept the premise that service agreements are *de facto* price setting mechanisms, then reviewing and monitoring service agreements clearly fall within the regulator's scope of responsibility given its role of tariff review.

Setting Minimum Operational Performance Standards

It is prudent for Egypt to seek greater assurances that its ports offer a minimum performance standard to port customers. Minimum performance standards can be imposed on operators and port authorities. This approach conforms to the "light touch" regulation objective, thus avoiding the risk of market distortion associated with price setting regulation.

We present below a discussion of the performance indicators recommended for application in Egypt. These indicators are being suggested in accord with certain guidelines we have formulated, including relevance to the objective of assuring minimum performance levels, pertinence of the indicator relative to what is being measured, objectivity to the extent that it leaves no ambiguity to what the indicator represents, auditable so that the indicator is reliable and can be verified, unequivocal and hence leaving no room for misinterpretation or re-interpretation, and ease of access to the information required to calculate the indicator. We also considered the ease of terminal operators for collecting the information required for calculating the indicators and reporting them to the regulator. As part of the discussion, we also precisely define the indicator, provide guidance for its calculation, and identify the sources for the data necessary for indicator calculation.

OBJECTIVE OF INCORPORATING PERFORMANCE INDICATORS

The objective of incorporating Performance Indicators (PI) involves two related concepts:

- ***Operational Efficiency*** – Related to the actual utilization of facilities; and
- ***Level of Service (LOS)*** – Related to the quality of services provided to the users of these facilities, mainly cargo and ship owners and their representatives.

Accordingly, the PIs are aimed towards assuring that the leased public facilities are efficiently operated by terminal operators while at the same time assuring the high quality of the services provided to the public at these facilities. In line with this conceptual categorization, the PIs are grouped into those related to operational efficiency and those to LOS.

The above two objectives have an inherent conflict, since higher utilization may result in congestion and deterioration of the level of service. Hence, the desirable values assigned to the PI intended for monitoring operational efficiency and LOS are usually referred to as *optimum* levels. Determining such optimum levels, admittedly, is difficult and normally requires detailed study.

TECHNICAL PROBLEMS IN SELECTION, DEFINITION AND MEASUREMENT OF PI

In addition to the principal problem of conflicts between utilization and level of service, there are many problems in defining and measuring the indicators within each category. The first problem is related to selection. As we show later, there are numerous indicators that can relate to utilization and LOS from which a small representative set has to be selected. Likewise, the same set would not necessarily be the same for all types of cargoes and all facilities.

Another problem relates to the lack of uniformity in the way ports define, collect, and process data necessary for calculating the selected PIs. This problem is understandable since each port should have the freedom to manage its facilities and operations reflecting the policies and philosophy of its management. This is another reason why the set of PIs should be small and hence the data required for their calculation should be minimal. Still, collecting these minimal data requires that each operator maintain a uniform and reliable data collection system, according to a set of forms provided by the regulator. Desirably, this system should be integrated in the Management Information System (MIS) of the terminal.

A third problem is that the ports subject to the system of PIs are also not uniform. Each terminal has its own unique physical setting in terms of overall layout, the size and configuration of facilities, and type and number of handling equipment. Likewise, each terminal may serve a different type of customer with different technical characteristics as well as expectations regarding LOS. Hence, prior to applying the system there is a need to "standardize" the participating ports and develop a consensus among port operators on the indicators to be applied.

PERFORMANCE INDICATOR VALUES

We suggest below values for each of the suggested indicators. These values are illustrative, as their efficacy should be assessed in a larger study. Once the proposed system of PIs (or a modified one) is accepted, it is advisable that a detailed study be conducted based on actual performance of Egyptian terminals and comparative terminals outside Egypt for firming up these values. Likewise, the values should be adjusted periodically to reflect changes in technology and operating systems (e.g., introduction of twin-lift, tandem lift, multiple empty, etc.) that will eventually find their way to Egypt.

PROPOSED PERFORMANCE INDICATORS

All performance measures of operational efficiency are related to time. An elaborate system of "time accounting", based on the principles of industrial engineering, was developed by Nathan Associates Inc. staff and presented in the regulatory module of the World Bank's *Port Reform Toolkit*.[13] This system defines and records a series of events during the handling process along with respective elapsed times between these events. Most ports use this or a similar system as a basis for operational control, which also forms an essential part of their Management Information Systems (MIS).

Figure 5 presents a schematic chart illustrating the three main components of the terminal and the events and elapsed times for each. As seen in this figure, the upper portion is devoted to the entire ship (ship and gang or crane[14] operations), which can be worked by one or more gangs; the lower portion relates to productivity of one of the gangs. We have adapted the original figure for the time accounting system to reflect terminal, yard, and gate operations, which are addressed in the bottom portion of the figure.

The PIs related to the ship and crane operations can theoretically consist of numerous measures, each addressing a different aspect of the operation. However, we recommend employing only those PIs that are essential for achieving the objectives sought by including performance criteria in concession contracts. The ultimate PIs, therefore, should address the following events and elapsed times, all of which are clearly indicated in Figure 5:

- ***Ship Arrival Time*** – Actual time of arriving at the port's entrance buoy, which is the meeting point with the port pilot;

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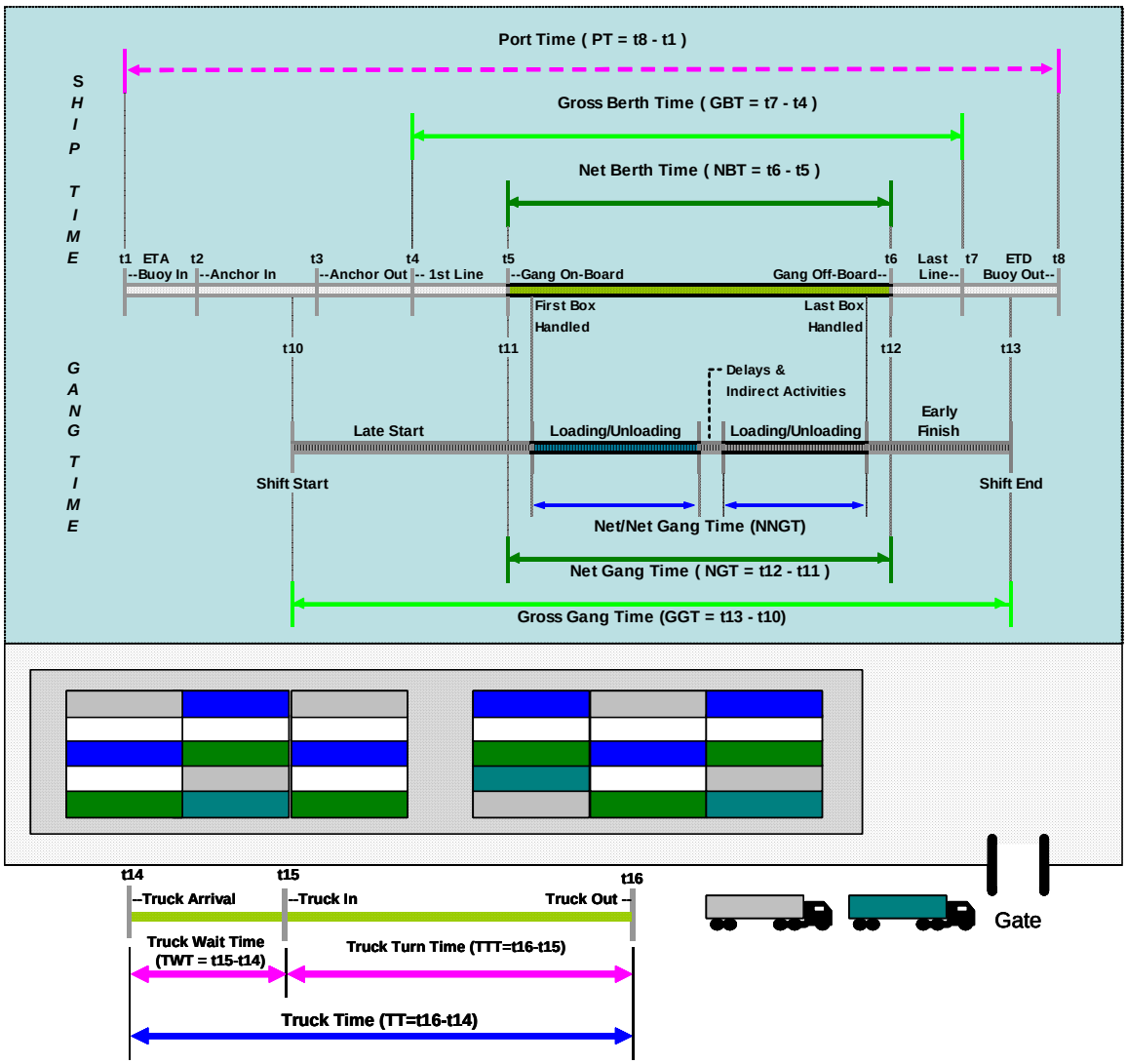
[13] Nathan Associates Inc., *Port Reform Toolkit* (Regulatory Module), The World Bank, Washington, D.C. 2001.

[14] These terms are used interchangeably in the case of containership and Lo/Lo operations. The terms can be adjusted in case of bulk (pneumatic head) but are inappropriate for Ro/Ro (auto discharge).

Figure 5
Time Accounting System for Port Operations



- ***Ship Ready to Work Time*** – Actual time when ship is moored at the berth, cleared, and ready for the gangs to begin work;
- ***Ship Net Berth Time*** – The elapsed time for the ship from the time the gang is ready to work until handling is finished, which is roughly equal to first-to-last box;
- ***Gang Net Work Time*** – Similar to Net Berth Time, but for each gang;
- ***Moves*** – The number of boxes ("lifts") transferred between ship and dock during Net Berth Time, including re-handles, but excluding cell-cell and hatch covers.

The definitions above only include terms and concepts which seem to be somewhat unclear and not terms, such as truck arrival time, which seem straightforward. We elaborate on the suggested PIs for Operational Efficiency in the next section.

PROPOSED PERFORMANCE INDICATORS – OPERATIONAL EFFICIENCY

The indicators described below are related to ship productivity, crane productivity, and berth utilization. We note that PIs related to yard (storage) productivity and the related dwell time are not included here though in most container terminals the yard (waterfront area) determines the entire terminal capacity. For example, a common PI is TEU/yard hectare (or, sometimes TEU/terminal hectare, or TEU/slot, etc.). There are several reasons for this exclusion. First, yard productivity is a direct function of the dwell time of containers; a shorter dwell time provides for more turnarounds of each yard space and hence larger capacity. However, the interest of the terminal operator is not necessarily increasing capacity but deriving higher revenues, which may be tied directly to longer dwell times and higher storage fees. Another consideration is attracting lines by allowing them to keep empties or satisfying (shipper) customer demands for longer dwell times in the terminal. Hence, this PI can be misleading, as high cargo dwell time may not necessarily reflect bad terminal performance.

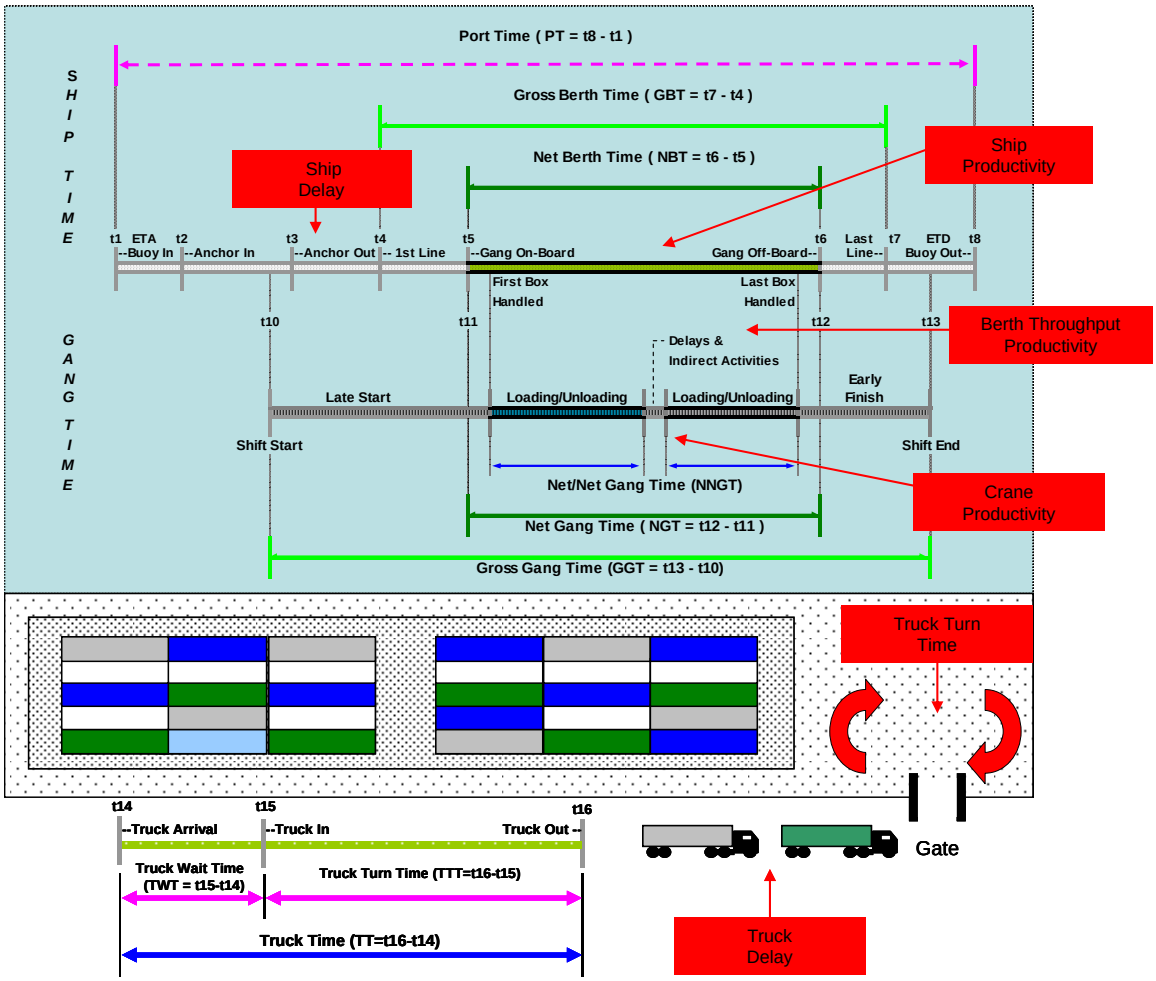
Second, the terminal can use off-shore yards to enhance its capacity and to shorten the dwell time of its on-dock yard, the one subject to the PI system. However, the efficiency of yard utilization is indirectly captured by the PIs related to berth and gate productivity and level of service. If the yard is congested, ships and trucks have to wait, adversely affecting the indicators for operational efficiency.

Figure 5 identifies the relevant indicators for port performance. These are described below.

Ship Productivity

This is probably the most important PI for container terminals. The PI is calculated by dividing the number of Moves by its Net Berth Time measured in hours (moves/hour). The higher the resulting number, the more desirable it is. However, the resulting productivity score, in addition to indicating the performance of the port, is also affected by factors that may be within or outside the control of the terminal operator. For example, ship-handling productivity is directly related to the number of gangs assigned to it. This, in turn, is related to the number of gangs (shore cranes) available at the port, which also reflects the demand for these gangs by other ships at the berth. It is also related to the size of ship and the number of total moves since smaller ships can only be served with one crane. Likewise, there is no point in assigning more than one crane to handle a ship if the total number of moves is small.

Figure 6
Recommended Port Performance Indicators for Port Sector Regulation



Additionally, ship-handling productivity is also related to the next measure, Gang Productivity. Higher gang productivity results in higher ship productivity and vice-versa. Gang productivity, as explained below, is also affected by ship characteristics and the ship stowage plan. Figure 7 presents a set of proposed PIs related to ship productivity. As seen in this figure, the Ship Productivity indicator is divided into 3 categories according to the number of moves, which usually correlates with the size (TEU capacity) of ships. Figure 7 also identifies the information required for calculating each of the indicators as well as the information source.

Figure 7
Recommended Port Performance Indicators

Indicator	Unit	Information Required for Measurement	Source of Data
I. Operational Efficiency			
Ship Productivity	Moves/Hour	Number of moves during operations (per ship type)	Port Operator
		Net berth time	Port Operator
Crane Productivity	Moves/Crane Hour	Number of moves per operation (per crane)	Port Operator
		Net crane time	Port Operator
Berth Throughput Productivity	TEU/ Berth-m	Annual throughput (TEU)	Port Operator
		Workable length of berth (meters)	Port Society
II. Level of Service			
Ship Delay	Hour	Ship arrival time to bouy	Port Captain
		Time when ship is ready to work	Port Operator
		Window's starting time	Port Operator
Truck Delay	Hour	Truck arrival time	Port Operator
		Truck in time	Port Operator
		Truck schedule time	Port Operator
Truck Turn Time	Hour	Truck in time	Port Operator
		Truck out time	Port Operator

Crane Productivity

This PI is similar to Ship Productivity, except that it is related to each gang. Gang productivity is affected first and foremost by labor proficiency but also by the proper planning of the handling process. It is also affected by the situation in the yard, because the common constraint on shore-crane productivity is the ability of the yard to "absorb" the flow of containers from the ship during discharge and "generate" this flow during loading. Hence, as the overall throughput of the port increases and the yard becomes more occupied, crane productivity may actually decrease.

Berth Utilization

There are two common PIs used to measure berth utilization: percentage of occupancy time and throughput per berth. A comprehensive discussion of the advantages/disadvantages of the two measures is beyond the scope of this report. In line with the general suggestion at the outset of this report that tangible measures are preferable, we suggest the second measure be used. However, the selection of this measure is complicated as even the term "berth" is unclear because of the substantial variance in ship length. For example, the length (LOA) of ships employed by an intra-Mediterranean feeder service might be half that of deep-sea mainline vessel. Hence, the proposed measure relates to the throughput per berth-meter. Since throughput is usually measured in TEUs and not in Moves, the suggested indicator is TEU per berth-meter. We also suggest a change in nomenclature for this indicator to Berth Throughput as it better reflects the way it is calculated.

PROPOSED PERFORMANCE INDICATORS – LEVEL OF SERVICE

Ship Delay

Ship Delay is a straight forward measure related to delays due to unavailability of berth and gangs ready to work. It is calculated by subtracting the original scheduled time for the vessel's arrival to the port from the time the vessel arrives to the berth (second line tied) and is ready to work. The ideal situation is, obviously, no delays. Delays of up to about 4 hours are considered acceptable as this delay can be absorbed in the vessel's itinerary. A delay exceeding 4 hours is unacceptable and can lead to congestion surcharges imposed by carriers.

The above calculation assumes that ship's arrival is on time and incorporates a provision for sailing time between buoy and berth, mooring, and clearances. For example, ships are expected to arrive at the pilot station at least 2 hours prior to the planned Ready to Work time. Late arrival of ships should not be considered when calculating ship delay. However, consistent late arrival would suggest adjustments be made to the berthing plan.

Truck Delay

Truck Delay is calculated as the difference in time between appointment time and actual time when gate processing began. As in the case of Ship Delay, the assumption is that the truck arrival time (pre-gate) is prior to the appointment time. The suggested values for optimal is less than 30 minutes (i.e., that the truck with appointment time of 8:00 – 8:30 am will be accepted no later than 9:00 am if it arrived prior to 8:30 am).

Truck Turn Time

This measure relates to the combination of gate processing time, traveling to the stack, waiting for yard equipment, loading/unloading, traveling back to the gate and gate processing on the way out. It is calculated by subtracting the in-gate time from the out-gate time.

NON-CONTAINER FACILITIES

The PIs described and discussed above are geared toward containers. The same PIs could theoretically be applied for bulk terminals, except that no standardized values are available because of the range of technologies and handling capacities available for bulk handling. The performance of these terminals, especially those employing mechanized systems for handling bulk cargoes, are very dependent on equipment specifications. So it is difficult to prescribe productivity standards. Instead, performance can be determined to the extent that vessels are not honoring their windows, either not arriving and departing within the window period or extending their stays beyond their window periods. While there may be several causes for vessels not meeting their window obligations that fall outside the control of the terminal operator, the terminal operator manages the window system and therefore has

to force carriers to adhere to the windows or to modify the window periods to reflect the variable conditions of bulk vessels.

A similar situation exists for the truck appointment system. If truck delay becomes a problem to the extent there are long queues at the gate despite the installation of a truck appointment system, then this suggests the operator is not doing a good job of managing the appointment system. Effective management of the appointment system will ameliorate gate congestion.

In short, the performance of both vessel window and truck appointment systems serve as proxies for productivity standards that are difficult to define for bulk terminals. Accordingly, regulators should require that terminals providing bulk handling services install vessel window and truck appointment systems.

THE WAY AHEAD

The above discussion addressed the need for a port regulator, the competitive setting of Egypt's port sector, and the procedures for monitoring competitive behavior. We also addressed to some degree the regulatory scope – monitoring, rate setting, case disposition, and operational performance indicators. These together will go far in assuring that Egypt's ports operate with optimal efficiency at the lowest possible cost. By extension, they will also enhance Egypt's global competitiveness and ultimately reduce consumers cost.

Continuing the development of the regulator, however, requires steady assistance to the Ministry of Transport for planning, preparation, and execution. As noted earlier, port regulation is a relatively new concept worldwide. Virtually all cases of port regulators relied on assistance from reputable consultant economists to assist in their establishment.

This report contributes to the planning phase, which constitutes the development of a plan for establishing the independent port regulator and an implementation schedule consisting of actions that need to be taken and identification of the responsible party. The plan would provide guidance in terms of institutional (legal and legislative), organizational, and budget planning. Accordingly, primary activities that remain in this phase include:

1. Detailed review of the scale and scope of port infrastructure, operations, and administration in Egypt;

2. Conducting a workshop to develop consensus on regulatory scope among public and private stakeholders;

3. Development of MOUs and legislation or related provisions and amendments for establishing the port regulator;

4. Preparing regulatory policy and implementing regulations as pertaining to the regulatory scope for the port regulator;

5. Preparing a conceptual organizational plan, to include governance structure, conceptual organizational chart, staffing plan, and position descriptions for key staff;

6. Defining IT requirements to facilitate regulatory functions;

7. Preparing a startup operational plan leading to a "go live" target date for the port regulator;

8. Formulating a 3-year operational budget and financing plan;

9. Preparing an implementation schedule of key actions and assignment of responsibility.

The preparation phase involves the development of a number of tools and processes that enable the regulator to perform its functions. Tools and processes refer to:

1. port competition monitoring system to allow the regulator to monitor competitive behavior of port operators;

2. development of operational performance indicator and tariff reporting/filing procedures;

3. IT systems development and installation for administration and case/complaint management and disposition;

4. assistance in developing administrative rules and procedures;

5. assistance in recruiting staff candidates for the regulator as well as board members;

6. Training of new staff.

The implementation phase consists of:

1. continued training of staff;

2. assistance in the handling actual complaints or cases identified from internal monitoring.